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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/038,172 | 01/03/2002 | Louis L. Hsu | 728-221 (YOR9-2001-0603 U | 7827 |

7590 08/28/2003

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| EXAMINER |
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STEIN, STEPHEN J

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| ART UNIT | PAPER NUMBER |
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1775

DATE MAILED: 08/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/038,172

Applicant(s)

HSU ET AL.

Examiner

Stephen J Stein

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-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 8-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>2</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicants' election of without traverse of the Group I claims in Paper No. 4 is acknowledged. In Applicants' election, applicant elected "Group I Claims 1-17 classified in class 428, Subclass 195". This is presumed to be a typographical error since the Group I claims were claims 1-7, not claims 1-17. See Examiner's restriction requirement (Paper #3).

Claim Rejections - 35 USC § 112

2. Claims 4 and 7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. Claim 4 recites the limitation "The hybrid substrate according to claim 1, wherein each of the at least two different materials is selected from the group consisting of GaAs, InP, silicon wafer, GaN-based high-electron mobility transistors (HEMTs), and optoelectronic devices".
4. The limitation "GaN-based high-electron mobility transistors (HEMTs), and optoelectronic devices" make the claim indefinite because it is unclear how the GaN HEMTs and optoelectronic devices" are materials within the scope of the Markush group. Further, it is unclear if applicants are intending the limitation "optoelectronic devices" to mean all optoelectronic devices or just GaN-based optoelectronic devices.
5. Claim 7 recites the limitation "wherein each of the plurality of pockets has a greater surface area than a cross-section surface area of the at least two different materials". This limitation makes the claim indefinite because the claim fails to define the "cross-section surface

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of the at least two different materials” and therefore it unclear how to relate cross-section surface area to the surface area of each of the plurality of pockets.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

7. Claims 1-3 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by US 4,851,078 (Short et al.).

Short teaches a SOI substrate having two (plurality of) with moats or grooves (pockets) which are filled with an oxide layer and polycrystalline silicon layer in the grooves and grown (bonded to) over the oxide layer (col. 4, lines 8-25 and Figures 5-7). The reference further discloses that the two materials (oxide and polycrystalline material) are coplanar with the top surface of the substrate (See Figures 5-7).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Short et al. in view of US 5,506,433 (Ohori et al.).

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As stated above, Short teaches the claimed hybrid substrate, but fails to teach the claimed the substrate.

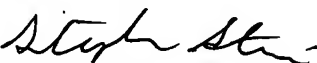
Ohuri teaches that it is known that that SOI substrates used in HEMTs are known to be formed on single crystal sapphire substrates (Abstract and col. 1, lines 10-31).

Therefore, it would have been obvious to a person or ordinary skill in the art at the time of the invention to use Sapphire as the substrate for the hybrid substrate disclosed by short because the reference teaches its use for the same purpose.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen Stein whose telephone number is (703) 305-0583. The examiner can normally be reached on Monday through Friday from 8:30 a.m. to 5:00 p.m. If the attempts to reach the examiner are unsuccessful, the examiner's supervisor, Deborah Jones can be reached by dialing (703) 308-3822. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group Receptionist whose phone number is (703) 308-0661. The fax phone number for this group is (703) 872-9310 for non-final responses and (703) 872-9311 for after final responses.

August 21, 2003


Stephen J. Stein